

IN THE CLAIMS

Please cancel Claims 5, 6, 16 and 17, without prejudice or disclaimer of subject matter.

Please amend Claims 1, 2, 12 and 13, to read as follows.

1. (Currently Amended) An ink jet printing method of performing printing by repeating a scanning step for scanning a row of ink ejection orifices for ejecting ink and a row of reacting liquid ejection orifices for ejecting a reacting liquid that reacts with the ink, across a printing medium, in order to eject the ink and the reacting liquid onto the printing medium, and a feeding step for feeding the printing medium, wherein

said scanning step performs the scan of the row of ink ejection orifices and the row of reacting liquid ejection orifices, so that a scanning area of the ink to which the ink is ejected while the row of ink ejection orifices scans and a scanning area of the reacting liquid to which the reacting liquid is ejected while the row of reacting liquid ejection orifices scans are adjacent to each other in a feeding direction of the printing medium, and, among the ink and the reacting liquid that have different permeability, a width of the scanning area of a liquid having relatively high permeability along the feeding direction is made greater than that of the scanning area of a liquid having relatively low permeability, ~~or a width of the scanning area of a liquid having relatively high permeability along the feeding direction is made equal to that of the scanning area of a liquid having relatively low permeability,~~

said feeding step feeds the printing medium, by an amount corresponding to a width which is smaller than the width of the scanning area of the liquid having relatively high

permeability by a predetermined amount, ~~and in a direction~~ so that the liquid having relatively high permeability is ejected ~~over~~ on the liquid having relatively low permeability,

ejection of the liquid having relatively low permeability onto the scanning area of the reacting liquid ejection orifices is performed during a single scan, and

at least for the liquid having relatively high permeability, ejection of the liquid onto a first scanning area, which corresponds to a width of the predetermined amount within the scanning area of the liquid, is performed during two scans, and ejection of the liquid onto a second scanning area other than the first scanning area, within the scanning area of the liquid, is performed during a single scan.

2. (Currently Amended) An ink jet printing method of performing printing by repeating a scanning step for scanning a row of ink ejection orifices for ejecting ink having a predetermined permeability and a row of reacting liquid ejection orifices for ejecting a reacting liquid that has lower permeability than the predetermined permeability of the ink and reacts with the ink, across a printing medium, in order to eject the ink and the reacting liquid onto the printing medium, and a feeding step for feeding the printing medium, wherein

said scanning step performs the scan of the row of ink ejection orifices and the row of reacting liquid ejection orifices, so that a scanning area of the ink ejection orifices to which the ink is ejected while the row of ink ejection orifices scans and a scanning area of the reacting liquid ejection orifices to which the reacting liquid is ejected while the row of reacting liquid ejection orifices scans are adjacent to each other in a feeding direction of the printing medium, and a width of the scanning area of the reacting liquid ejection orifices

along the feeding direction is made smaller than that of the scanning area of the ink ejection orifices by a predetermined amount,

said feeding step feeds the printing medium by an amount corresponding to the width of the scanning area of the reacting liquid ejection orifices,

the row of reacting liquid ejection orifices is located at an upstream side of the row of ink ejection orifices in the feeding direction so that the scanning area of the ink ejection orifices and the scanning area of the reacting liquid ejection orifices are made adjacent to each other in the feeding direction in the same scan,

ejection of the reacting liquid onto the scanning area of the reacting liquid ejection orifices is performed during a single scan, and

ejection of the ink onto a first scanning area, which corresponds to a width of the predetermined amount within the scanning area of the ink ejection orifices, is performed during two scans, and ejection of the ink onto a second scanning area other than the first scanning area, within the scanning area of the ink ejection orifices, is performed during a single scan.

3. (Previously Presented) An ink jet printing method comprising:

a providing step for providing a printing head in which a row of (n) ink ejection orifices for ejecting ink having a predetermined permeability and a row of (n-a) reacting liquid ejection orifices for ejecting a reacting liquid that has lower permeability than the predetermined permeability of the ink and reacts with the ink are arranged to be adjacent to each other in an array direction of the orifices;

a scanning step for scanning the printing head in a different direction from the array direction across a printing medium so that a scanning area of the reacting liquid ejection orifices, which has a width corresponding to the (n-a) orifices, and a scanning area of the ink ejection orifices, which has a width corresponding to the (n) ink ejection orifices, are adjacent to each other during a single scan; and

a feeding step for feeding the printing medium in a direction perpendicular to the direction of scanning by a width corresponding to the (n-a) ejection orifices, between two successive scans by said scanning step,

wherein ejection of the reacting liquid onto the scanning area of the reacting liquid ejection orifices is performed during a single scan, and

within the scanning area of the ink ejection orifices, ejection of the ink onto respective scanning areas, each of which has a width corresponding to (a) ejection orifices and which are located at respective end portions of the row of ink ejection orifices, is performed during two scans, and ejection of the ink onto a scanning area, which has a width corresponding to (n-a) ejection orifices and is not located at an end portion, is performed during a single scan.

4. (Withdrawn) An ink jet printing method comprising:

a providing step for providing a printing head in which a row of (n) ink ejection orifices for ejecting ink having a predetermined permeability and a row of (n-a) reacting liquid ejection orifices for ejecting a reacting liquid that has lower permeability than the predetermined permeability of the ink and reacts with the ink are arranged to be adjacent to each other in an array direction of the orifices;

a scanning step for scanning the printing head in a different direction from the array direction across a printing medium so that a scanning area of the reacting liquid ejection orifices, which has a width corresponding to the (n-a) orifices, and a scanning area of the ink ejection orifices, which has a width corresponding to the (n) ink ejection orifices, are adjacent to each other during a single scan; and

a feeding step for feeding the printing medium in a direction perpendicular to the direction of scanning by a width corresponding to the (n-a) ejection orifices, between two successive scans by said scanning step,

wherein, during a single scan by said scanning step, ejection of the reacting liquid onto the scanning area of the reacting liquid ejection orifices is performed at a printability duty of 100%, and

within the scanning area of the ink ejection orifices, ejection of the ink onto respective scanning areas, each of which has a width corresponding to (a) ejection orifices and which are located at respective end portions of the row of ink ejection orifices, is performed at a printability duty of less than 100%, and ejection of the ink onto a scanning area, which has a width corresponding to (n-a) ejection orifices and is not located at an end portion, is performed at a printability duty of 100%.

5. (Canceled)

6. (Canceled)

7. (Withdrawn) An ink jet printing method comprising:

a providing step for providing a printing head in which a row of (n) ink ejection orifices for ejecting ink having a predetermined permeability and a row of (n) reacting liquid ejection orifices for ejecting a reacting liquid that has lower permeability than the predetermined permeability of the ink and reacts with the ink are arranged to be adjacent to each other in an array direction of the orifices;

a scanning step for relatively scanning the printing head in a different direction from the array direction across a printing medium so that a scanning area of the reacting liquid ejection orifices, which has a width corresponding to the (n) orifices, and a scanning area of the ink ejection orifices, which has a width corresponding to the (n) ink ejection orifices are adjacent to each other during a single scan; and

a feeding step for feeding the printing medium in a direction perpendicular to the direction of scanning by a width corresponding to (n-a) ejection orifices, between two successive scans by said scanning step,

wherein, within the respective scanning areas of the ink ejection orifices and the reacting liquid ejection orifices, ejection of the ink and the reacting liquid onto respective scanning areas, each of which has a width corresponding to (a) ejection orifices and which are located at respective end portions of the row of ink and reacting liquid ejection orifices, is performed at a printability duty of less than 100%, and ejection of the ink and the reacting liquid onto a scanning area, which has a width corresponding to (n-a) ejection orifices and is not located at an end portion, is performed at a printability duty of 100%.

8. (Original) An ink jet printing method as claimed in claim 1, wherein the row of ink ejection orifices includes (n) ejection orifices and the row of reacting liquid ejection orifices includes (n-a) ejection orifices.

9. (Previously Presented) An ink jet printing method as claimed in claim 1, wherein the row of ink ejection orifices and the row of reacting liquid ejection orifices include (n) ejection orifices respectively, and said feeding step feeds the printing medium by an amount of $(n-a) \times p$ (where p denotes a pitch of the (n) ejection orifices).

10. (Previously Presented) An ink jet printing method as claimed in claim 1, wherein the row of ink ejection orifices and the row of reacting liquid ejection orifices are provided in a manner that the row of ink ejection orifices and the row of reacting liquid ejection orifices are adjacent to each other in the feeding direction.

11. (Previously Presented) An ink jet printing method as claimed in claim 1, wherein the ink or the reacting liquid is ejected during a first scan by said scanning step in which the row of ink ejection orifices and the row of reacting liquid ejection orifices are subjected to a forward scan, then said feeding step feeds the printing medium, and then the ink or the reacting liquid is ejected during a second scan by said scanning step in which the row of ink ejection orifices and the row of reacting liquid ejection orifices are subjected to a backward scan.

12. (Currently Amended) An ink jet printing apparatus comprising scanning means for scanning a row of ink ejection orifices for ejecting ink and a row of reacting liquid ejection orifices for ejecting a reacting liquid that reacts with the ink, across a printing medium, in order to eject the ink and the reacting liquid onto the printing medium, and feeding means for feeding the printing medium, the ink jet printing apparatus repeating the scanning and the feeding to perform printing, wherein

said scanning means performs the scan of the row of ink ejection orifices and the row of reacting liquid ejection orifices, so that a scanning area of the ink to which the ink is ejected while the row of ink ejection orifices scans and a scanning area of the reacting liquid to which the reacting liquid is ejected while the row of reacting liquid ejection orifices scans are adjacent to each other in a feeding direction of the printing medium, and, among the ink and the reacting liquid that have different permeability, a width of the scanning area of a liquid having relatively high permeability along the feeding direction is made greater than that of the scanning area of a liquid having relatively low permeability, ~~or a width of the scanning area of a liquid having relatively high permeability along the feeding direction is made equal to that of the scanning area of a liquid having relatively low permeability;~~

said feeding means feeds the printing medium, by an amount corresponding to a width which is smaller than the width of the scanning area of the liquid having relatively high permeability by a predetermined amount, ~~and in a direction~~ so that the liquid having relatively high permeability is ejected ~~over~~ on the liquid having relatively low permeability,

ejection of the liquid having relatively low permeability onto the scanning area of the reacting liquid ejection orifices is performed during a single scan, and

at least for the liquid having relatively high permeability, ejection of the liquid onto a first scanning area, which corresponds to a width of the predetermined amount within the scanning area of liquid, is performed during two scans, and ejection of the liquid onto a second scanning area other than the first scanning area, within the scanning area of the liquid, is performed during a single scan.

13. (Currently Amended) An ink jet printing apparatus comprising scanning means for scanning a row of ink ejection orifices for ejecting ink having a predetermined permeability and a row of reacting liquid ejection orifices for ejecting a reacting liquid that has lower permeability than the predetermined permeability of the ink and reacts with the ink, across a printing medium, in order to eject the ink and the reacting liquid onto the printing medium, and feeding means for feeding the printing medium, the ink jet printing apparatus repeating the scanning and the feeding to perform printing, wherein

said scanning means performs the scan of the row of ink ejection orifices and the row of reacting liquid ejection orifices, so that a scanning area of the ink ejection orifices to which the ink is ejected while the row of ink ejection orifices scans and a scanning area of the reacting liquid ejection orifices to which the reacting liquid is ejected while the row of reacting liquid ejection orifices scans are adjacent to each other in a feeding direction of the printing medium, and a width of the scanning area of the reacting liquid ejection orifices along the feeding direction is made smaller than that of the scanning area of the ink ejection orifices by a predetermined amount,

said feeding means feeds the printing medium by an amount corresponding to the width of the scanning area of the reacting liquid ejection orifices,

the row of reacting liquid ejection orifices is located at an upstream side of the row of ink ejection orifices in the feeding direction so that the scanning area of the ink ejection orifices and the scanning area of the reacting liquid ejection orifices are made adjacent to each other in the feeding direction in the same scan,

ejection of the reacting liquid onto the scanning area of the reacting liquid ejection orifices is performed during a single scan, and

ejection of the ink onto a first scanning area, which corresponds to a width of the predetermined amount within the scanning area of the ink ejection orifices, is performed during two scans, and ejection of the ink onto a second scanning area other than the first scanning area, within the scanning area of the ink ejection orifices, is performed during a single scan.

14. (Previously Presented) An ink jet printing apparatus using a printing head in which a row of (n) ink ejection orifices for ejecting ink having a predetermined permeability and a row of (n-a) reacting liquid ejection orifices for ejecting a reacting liquid that has lower permeability than the predetermined permeability of the ink and reacts with the ink are arranged to be adjacent to each other in an array direction of the orifices and which ejects the ink and the reacting liquid onto a printing medium to perform printing, said apparatus comprising:

scanning means for scanning the printing head in a different direction from the array direction across a printing medium so that a scanning area of the reacting liquid

ejection orifices, which has a width corresponding to the (n-a) orifices, and a scanning area of the ink ejection orifices, which has a width corresponding to the (n) ink ejection orifices, are adjacent to each other during a single scan; and

feeding means for feeding the printing medium in a direction perpendicular to the direction of scanning by a width corresponding to the (n-a) ejection orifices, between two successive scans by said scanning means,

wherein ejection of the reacting liquid onto the scanning area of the reacting liquid ejection orifices is performed during a single scan, and

within the scanning area of the ink ejection orifices, ejection of the ink onto respective scanning areas, each of which has a width corresponding to (a) ejection orifices and which are located at respective end portions of the row of ink ejection orifices, is performed during two scans, and ejection of the ink onto a scanning area, which has a width corresponding to (n-a) ejection orifices and is not located at an end portion, is performed during a single scan.

15. (Withdrawn) An ink jet printing apparatus using a printing head in which a row of (n) ink ejection orifices for ejecting ink having a predetermined permeability and a row of (n-a) reacting liquid ejection orifices for ejecting a reacting liquid that has lower permeability than the predetermined permeability of the ink and reacts with the ink are arranged to be adjacent to each other in an array direction of the orifices and which ejects the ink and the reacting liquid onto a printing medium to perform printing, said apparatus comprising:

scanning means for scanning the printing head in a different direction from the array direction across a printing medium so that a scanning area of the reacting liquid ejection orifices, which has a width corresponding to the (n-a) orifices, and a scanning area of the ink ejection orifices, which has a width corresponding to the (n) ink ejection orifices, are adjacent to each other during a single scan; and

feeding means for feeding the printing medium in a direction perpendicular to the direction of scanning by a width corresponding to the (n-a) ejection orifices, between two successive scans by said scanning means,

wherein, during a single scan by said scanning means, ejection of the reacting liquid onto the scanning area of the reacting liquid ejection orifices is performed at a printability duty of 100%, and

within the scanning area of the ink ejection orifices, ejection of the ink onto respective scanning areas, each of which has a width corresponding to (a) ejection orifices and which are located at respective end portions of the row of ink ejection orifices, is performed at a printability duty of less than 100%, and ejection of the ink onto a scanning area, which has a width corresponding to (n-a) ejection orifices and is not located at an end portion, is performed at a printability duty of 100%.

16. (Canceled)

17. (Canceled)

18. (Withdrawn) An ink jet printing apparatus using a printing head in which a row of (n) ink ejection orifices for ejecting ink having a predetermined permeability and a row of (n) reacting liquid ejection orifices for ejecting a reacting liquid that has lower permeability than the predetermined permeability of the ink and reacts with the ink are arranged to be adjacent to each other in an array direction of the orifices and which ejects the ink and the reacting liquid onto a printing medium to perform printing, said apparatus comprising:

scanning means for relatively scanning the printing head in a different direction from the array direction across a printing medium so that a scanning area of the reacting liquid ejection orifices, which has a width corresponding to the (n) orifices, and a scanning area of the ink ejection orifices, which has a width corresponding to the (n) ink ejection orifices, are adjacent to each other during a single scan; and

feeding means for feeding the printing medium in a direction perpendicular to the direction of scanning by a width corresponding to (n-a) ejection orifices, between two successive scans by said scanning means,

wherein, within the respective scanning areas of the ink ejection orifices and the reacting liquid ejection orifices, ejection of the ink and the reacting liquid onto respective scanning areas, each of which has a width corresponding to (a) ejection orifices and which are located at respective end portions of the respective rows of ink and reacting liquid ejection orifices, is performed at a printability duty of less than 100%, and ejection of the ink and the reacting liquid onto a scanning area, which has a width corresponding to (n-a) ejection orifices and is not located at an end portion, is performed at a printability duty of 100%.

19. (Canceled)